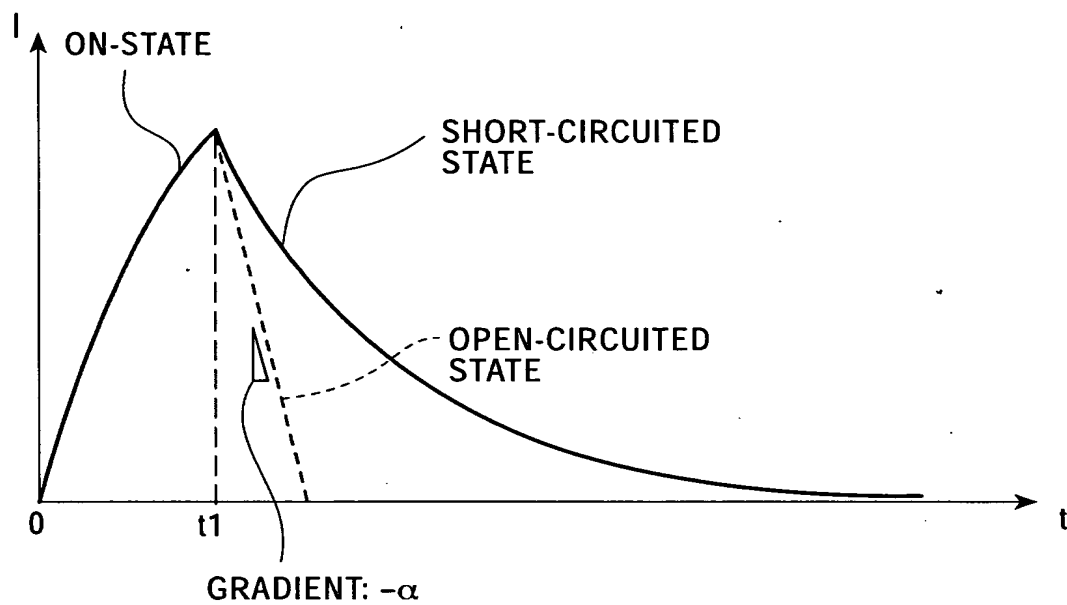


FIG. 1



2 / 31

FIG. 2

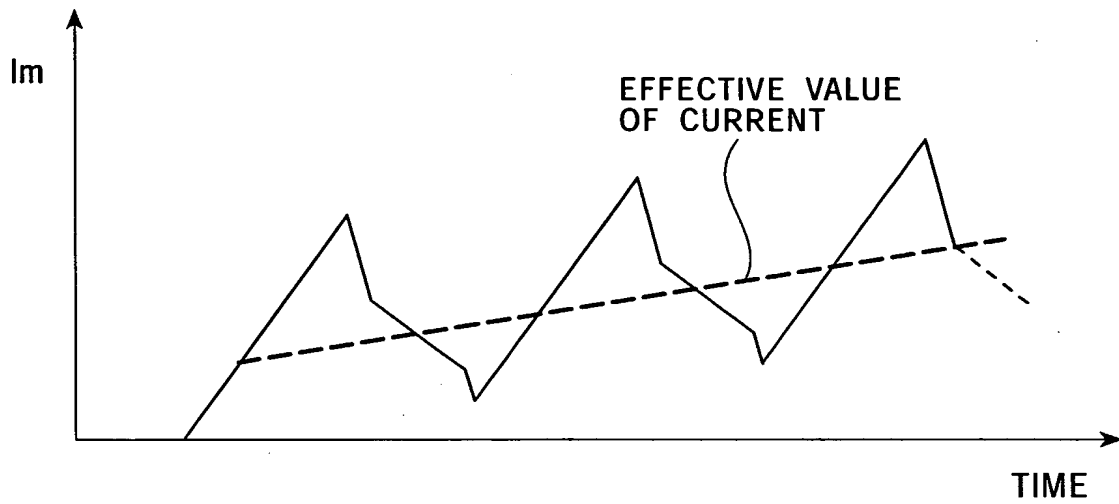
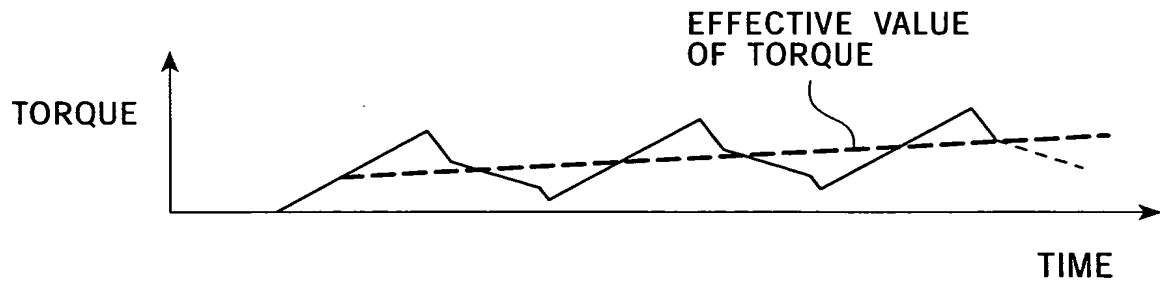


FIG. 3



3 / 31

FIG. 4

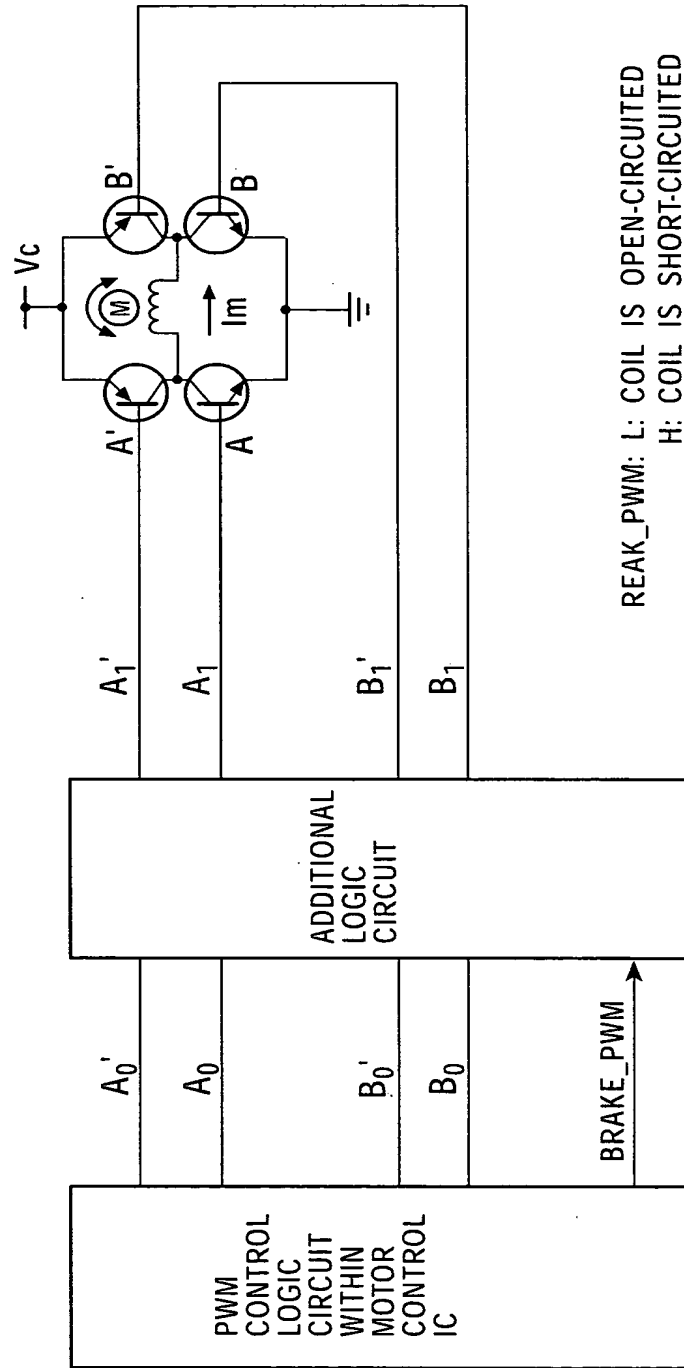
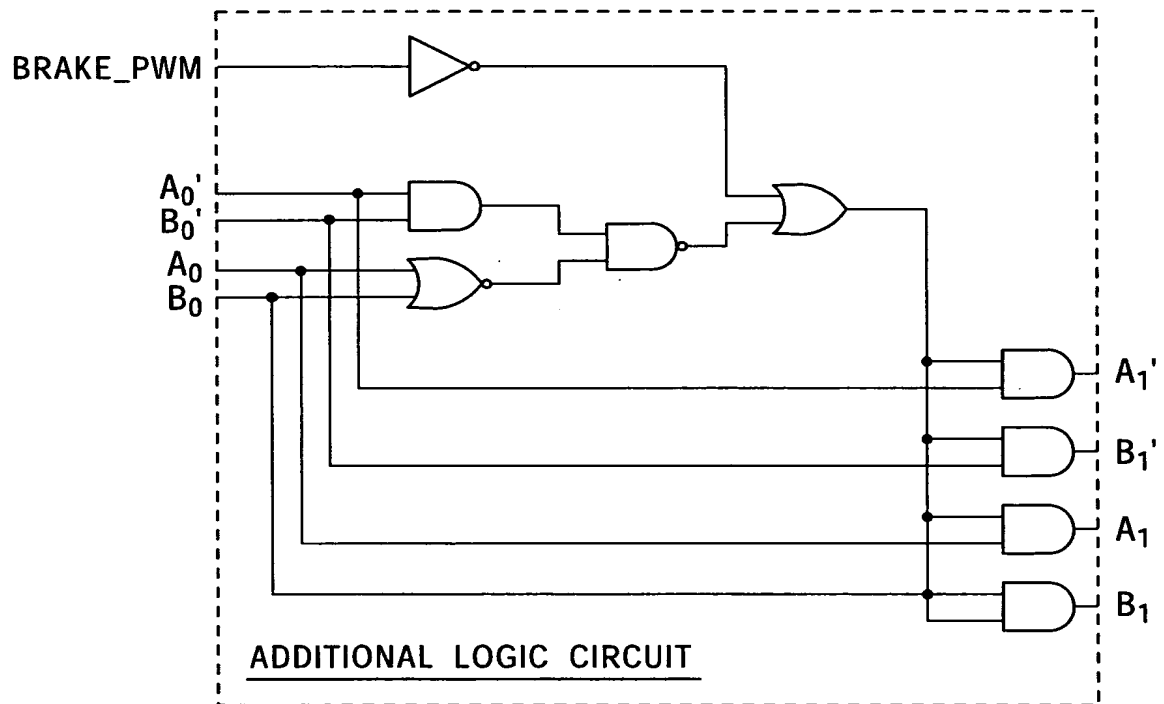
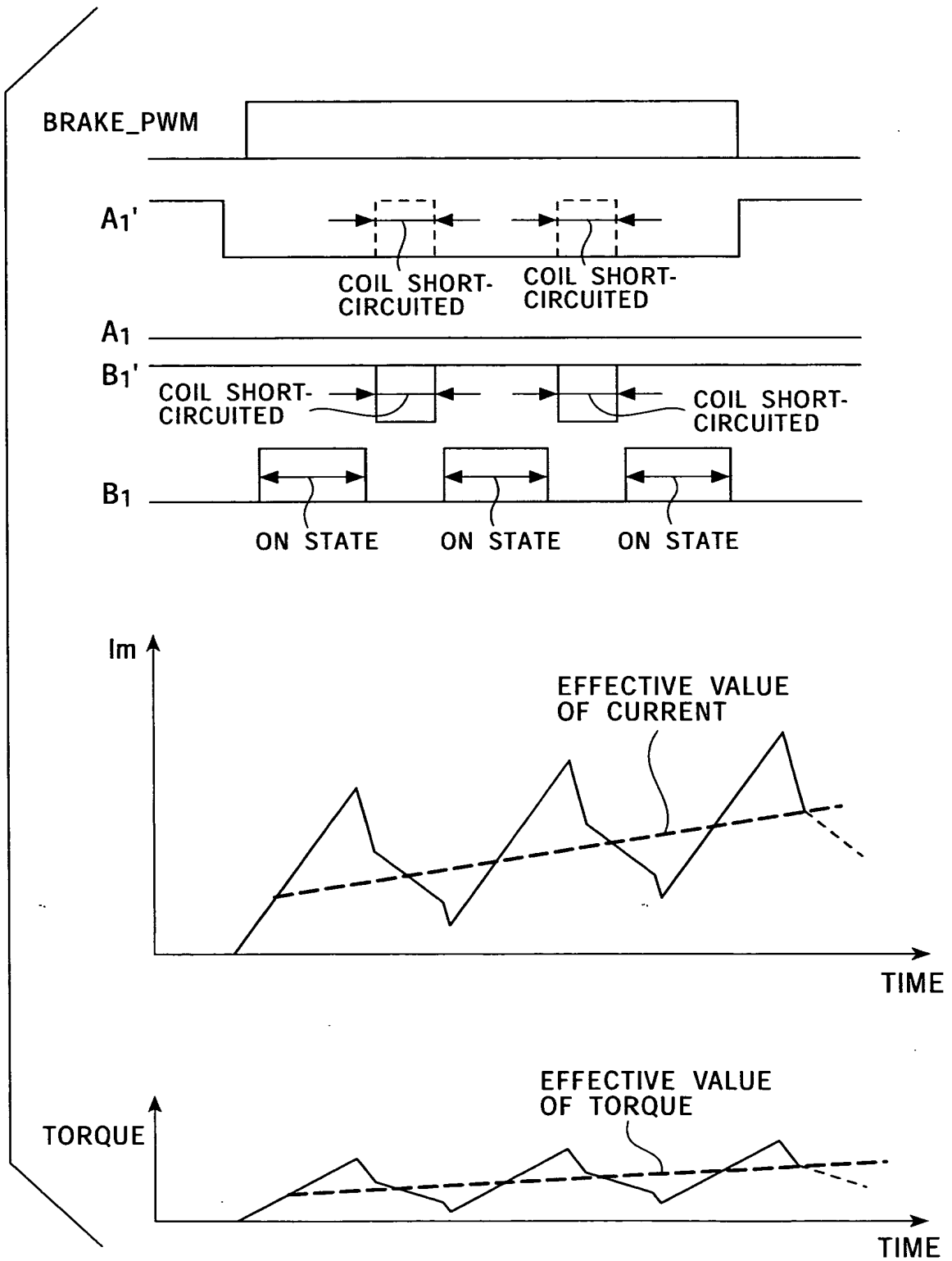


FIG. 5



5 / 31

FIG. 6



6 / 31

FIG. 7

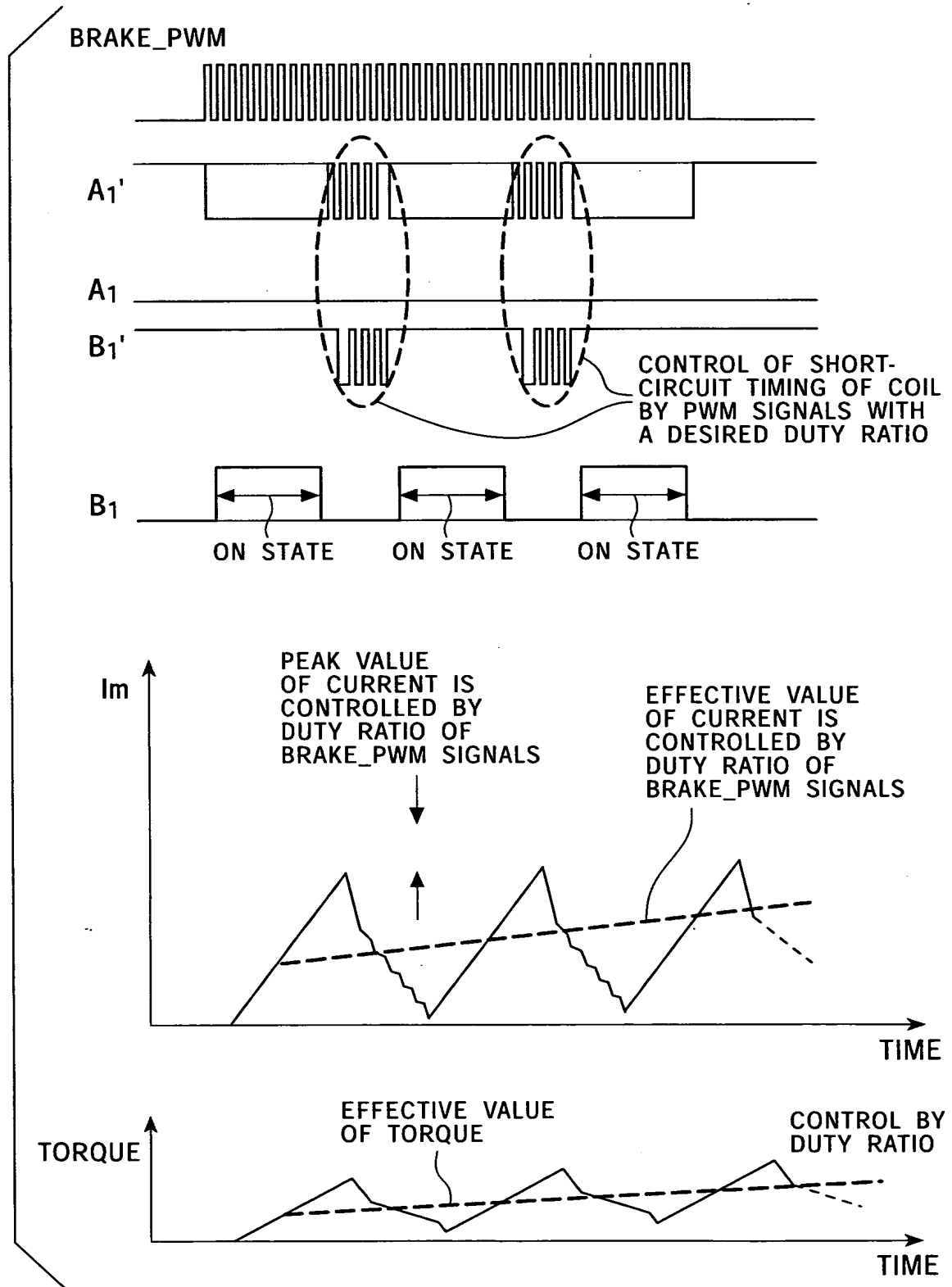


FIG. 8

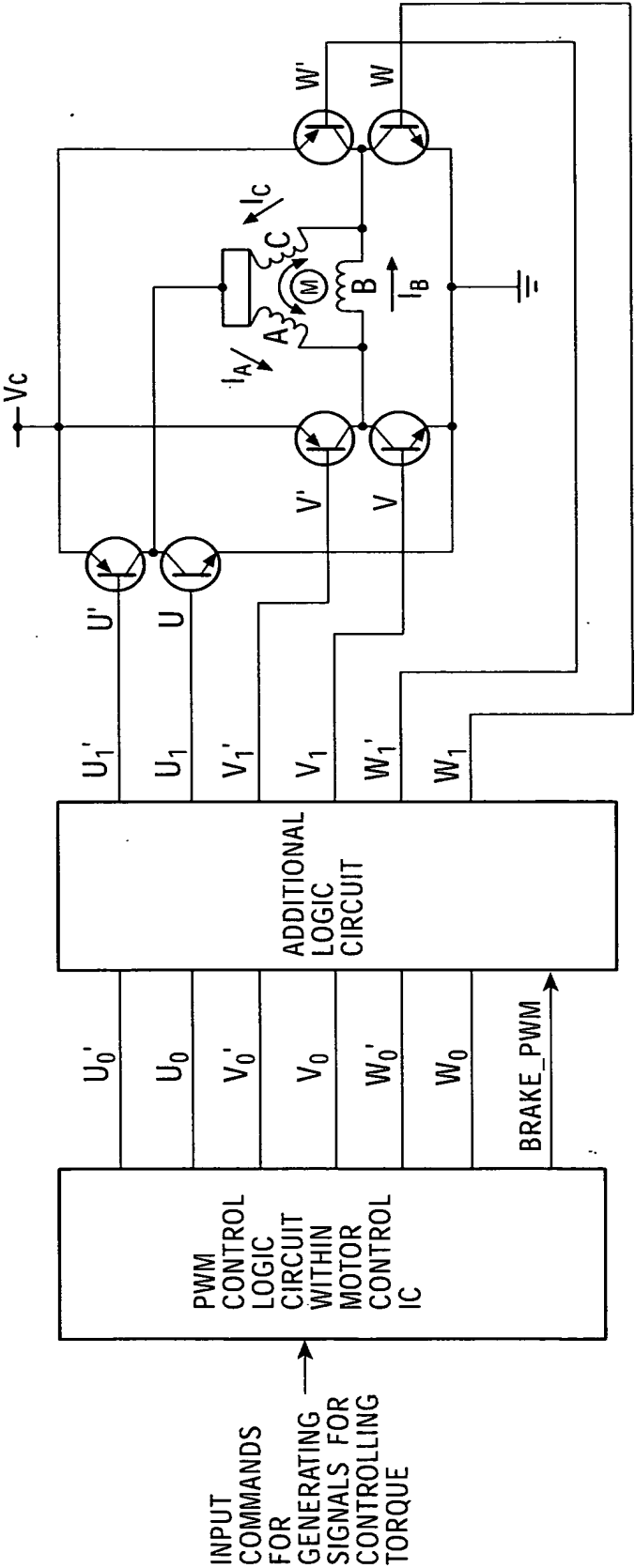
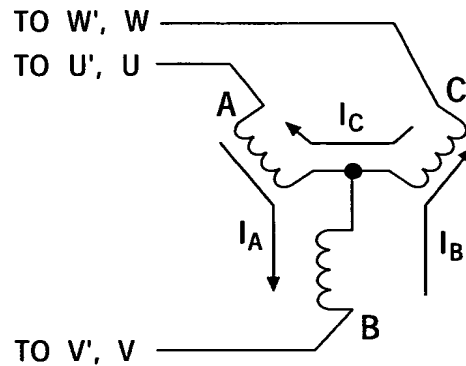


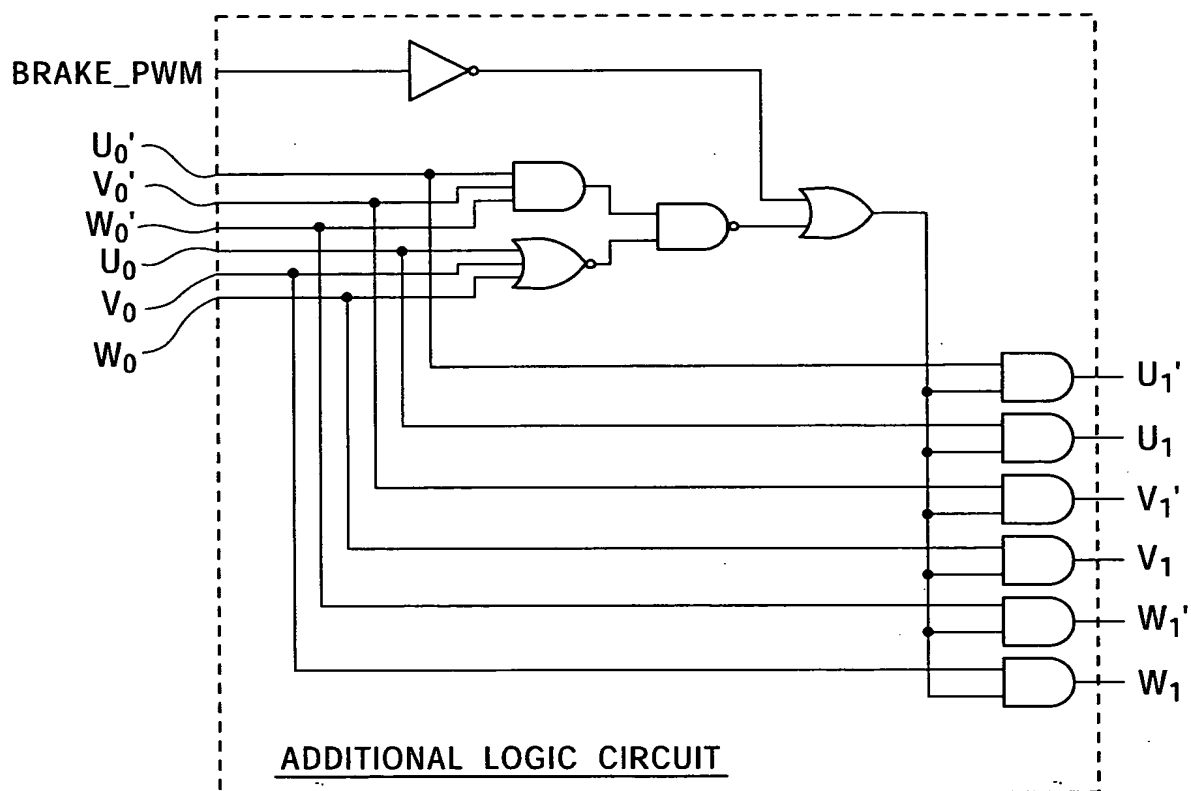
FIG. 9



- $I_A - I_C$: CURRENTS FLOWING A-PHASE MOTOR COIL
THROUGH C-PHASE MOTOR COIL (A)
- $R_A - R_C$: DC RESISTANCES OF A-PHASE MOTOR COIL
THROUGH C-PHASE MOTOR COIL (Ω)
- $L_A - L_C$: INDUCTANCES OF A-PHASE MOTOR COIL
THROUGH C-PHASE MOTOR COIL (H)
- V_c : POWER SUPPLY VOLTAGE FOR DRIVING MOTOR (V)
- K_t : TORQUE COEFFICIENT OF MOTOR (N-m/A)
- K_a : COUNTER-ELECTROMOTIVE VOLTAGE
COEFFICIENT OF MOTOR (V/rad/s)

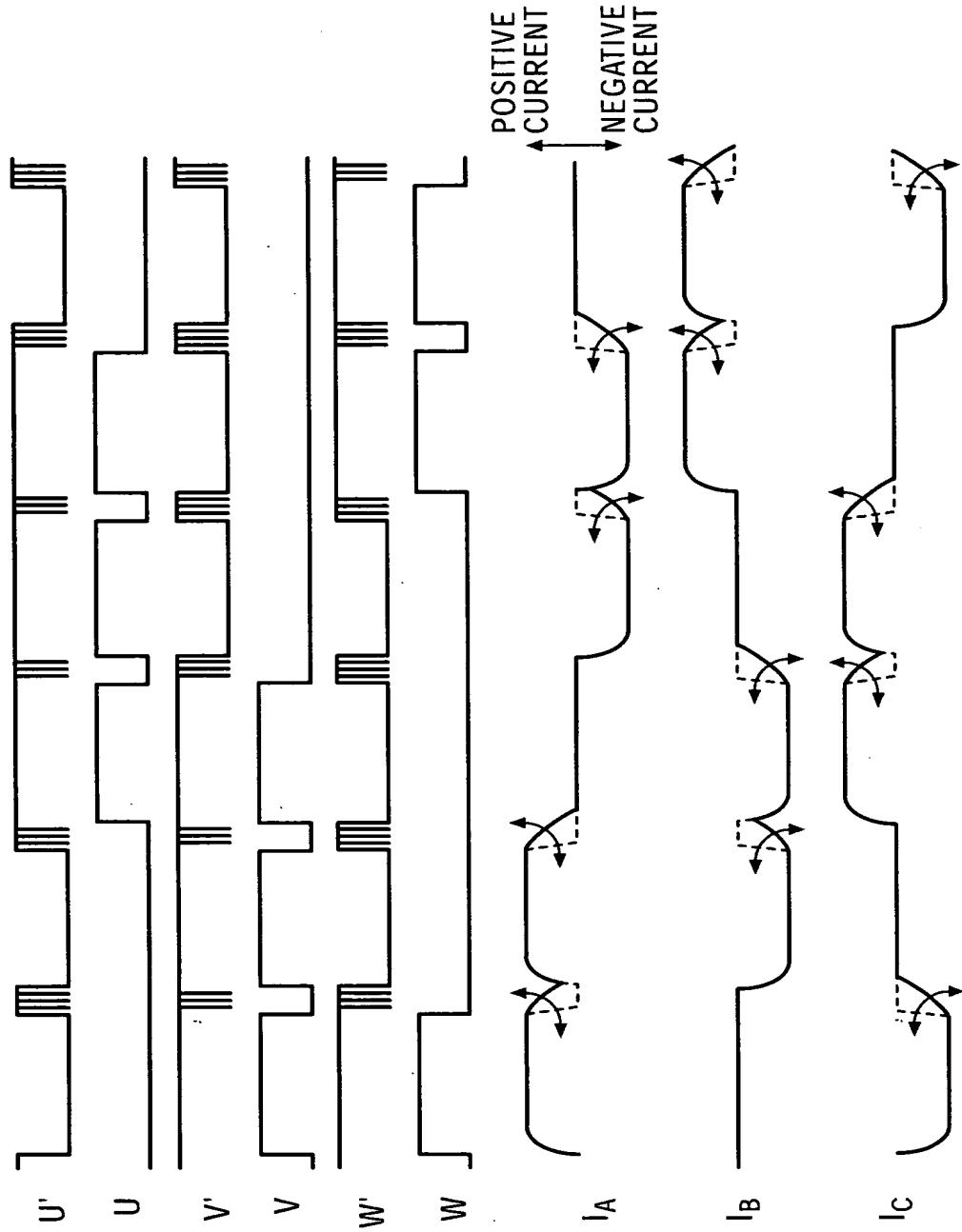
9 / 31

FIG. 10



10 / 31

FIG. 11



11 / 31

FIG. 12

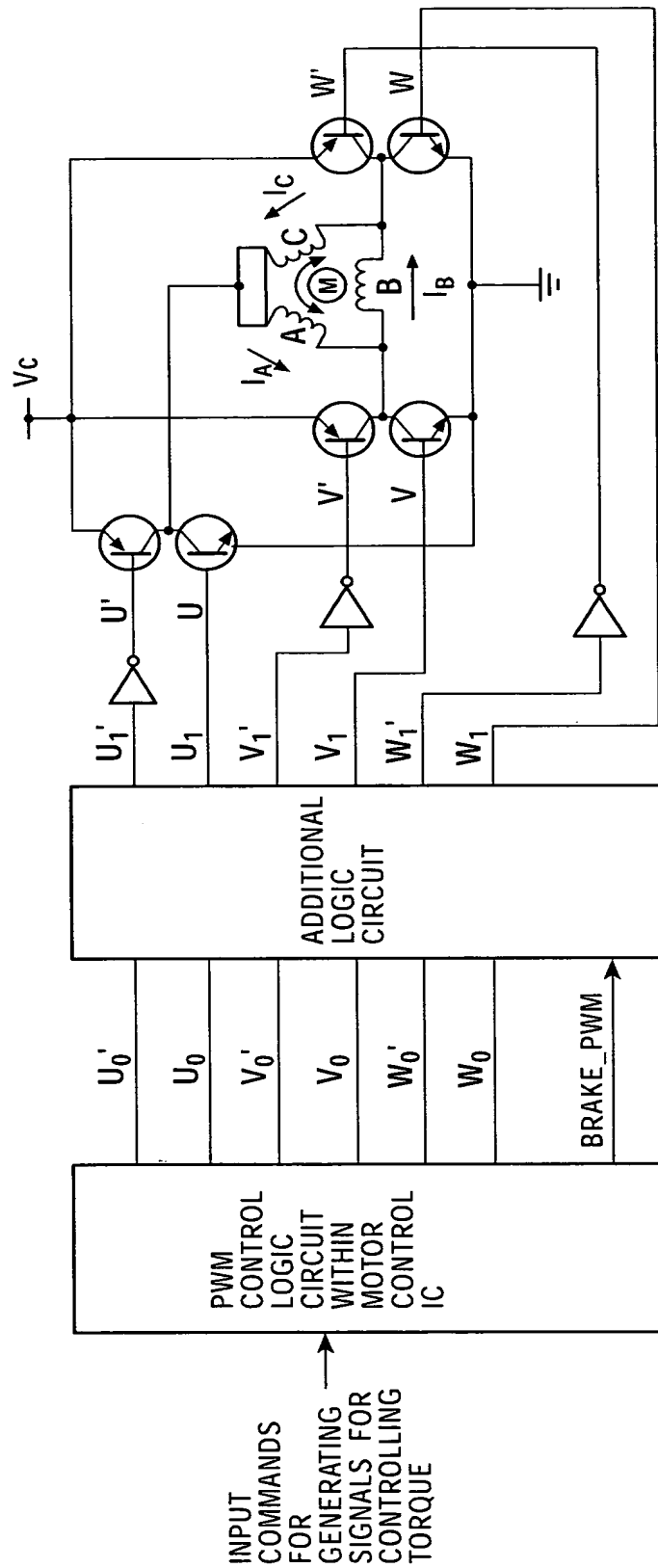
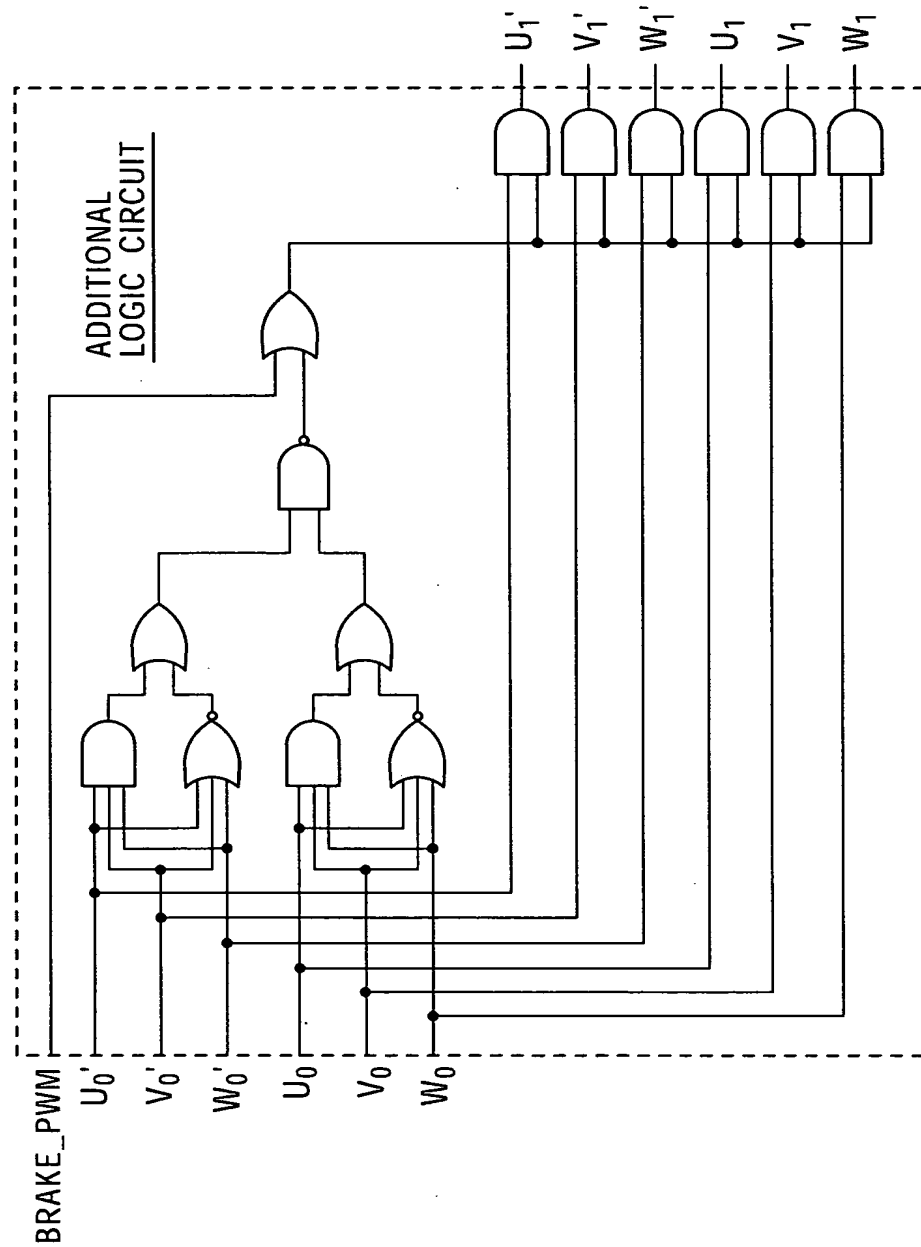
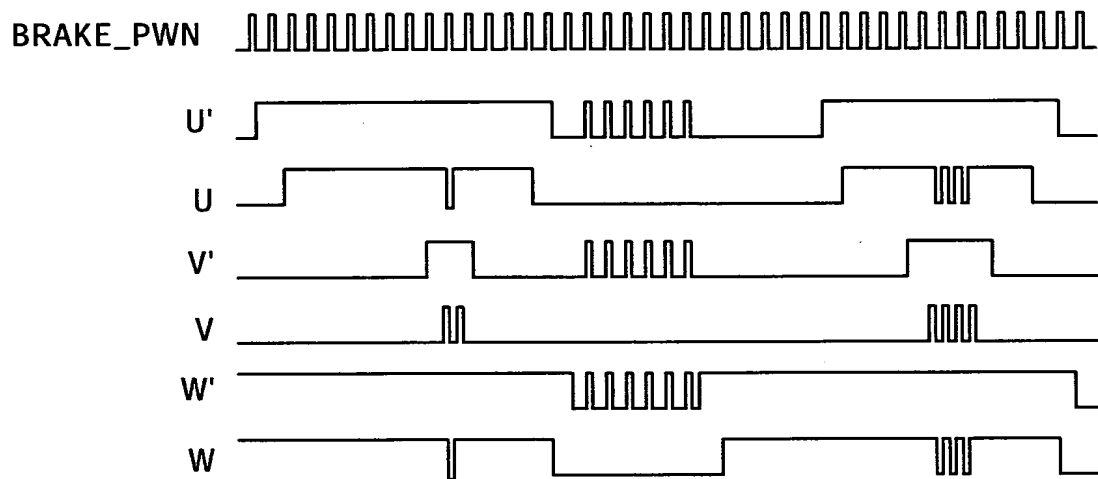


FIG. 13



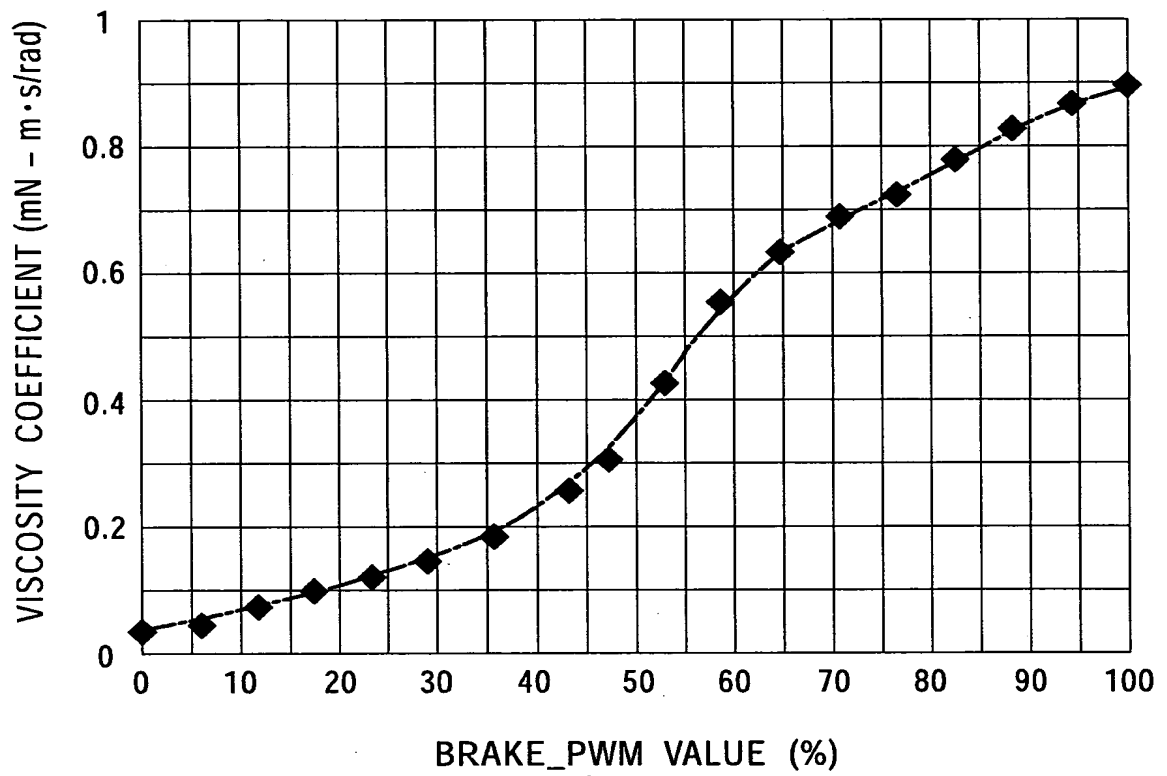
13 / 31

FIG. 14



14 / 31

FIG. 15



15 / 31

FIG. 16

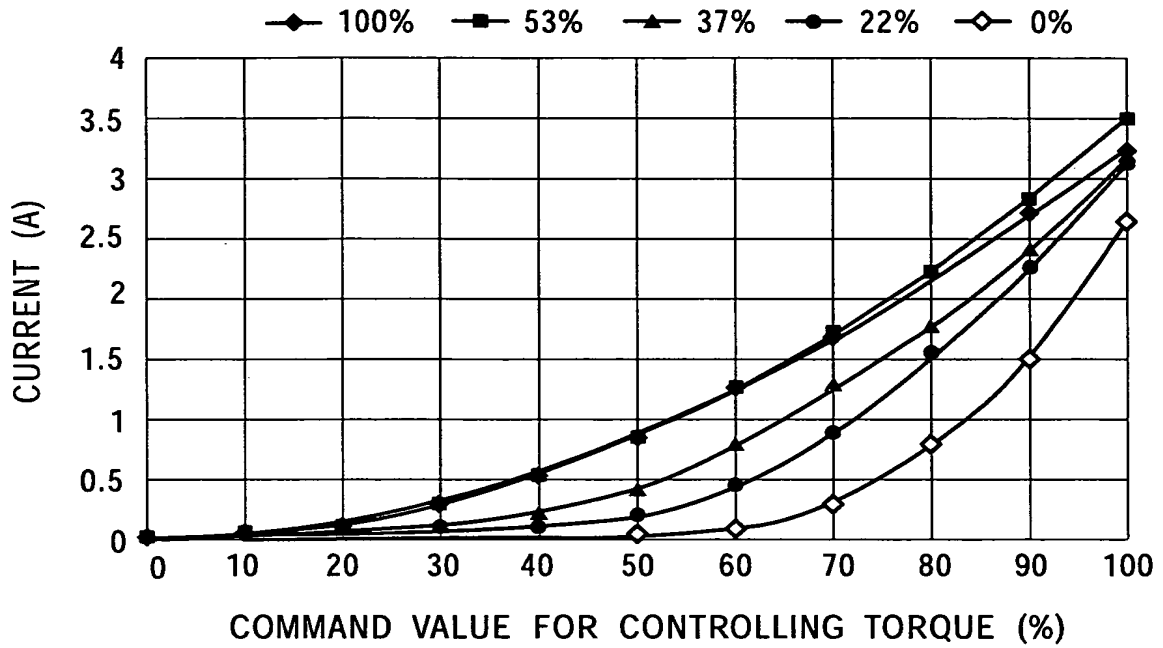
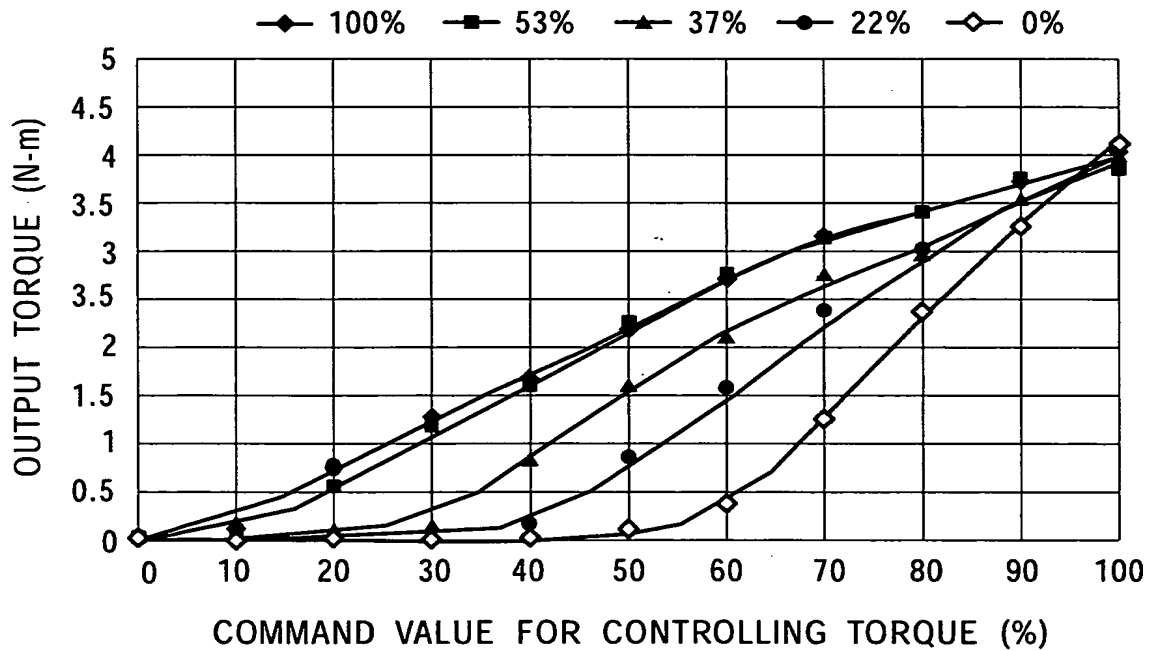


FIG. 17



16 / 31

FIG. 18

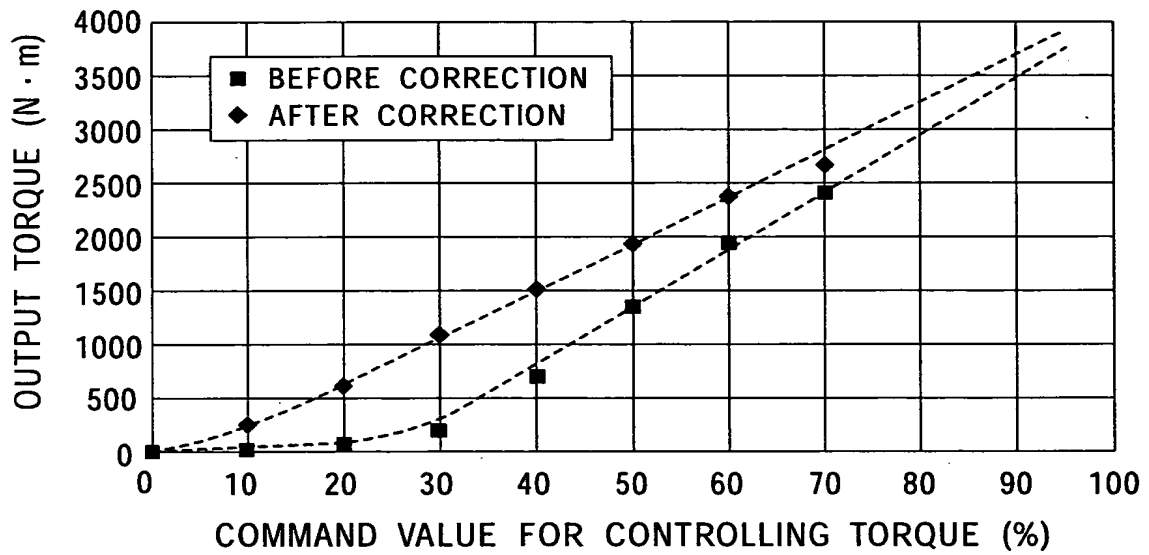
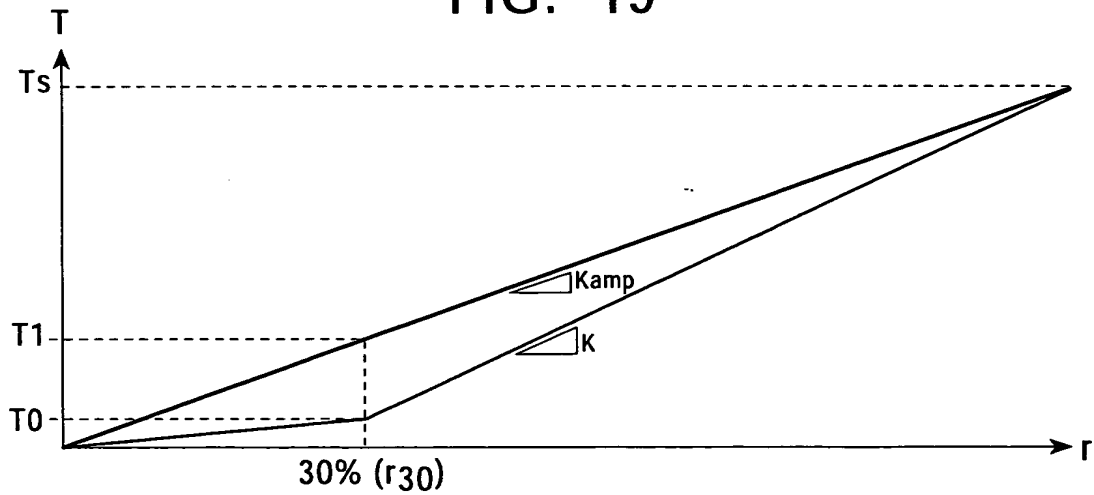


FIG. 19



17 / 31

FIG. 20

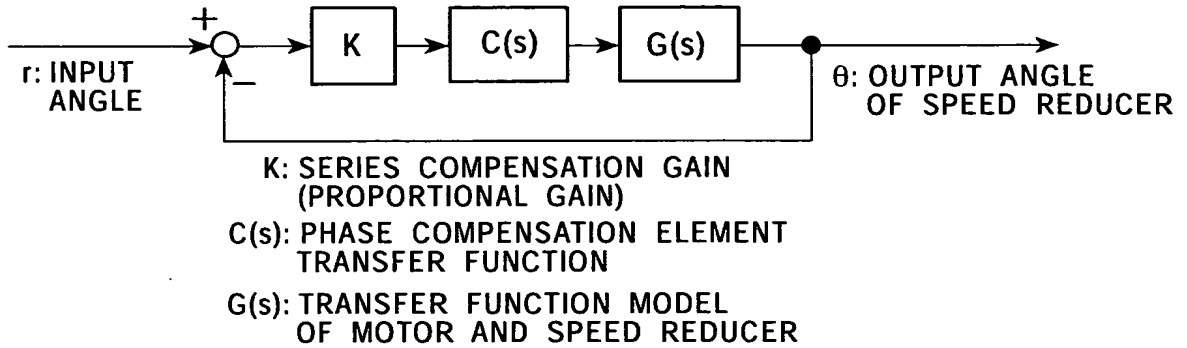
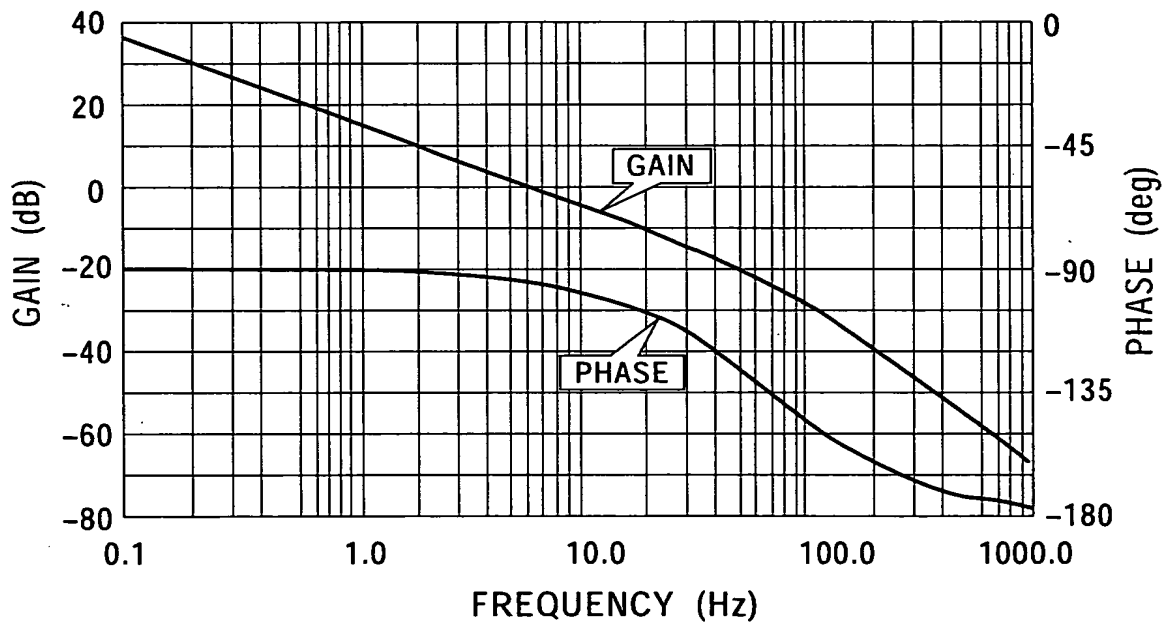


FIG. 21



18 / 31

FIG. 22

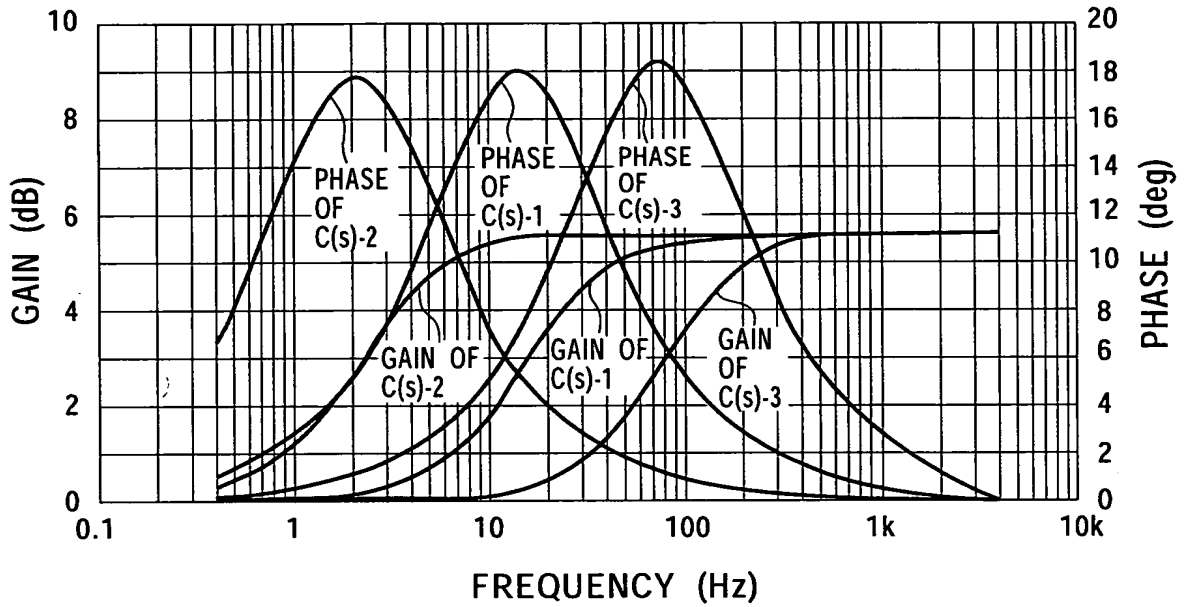
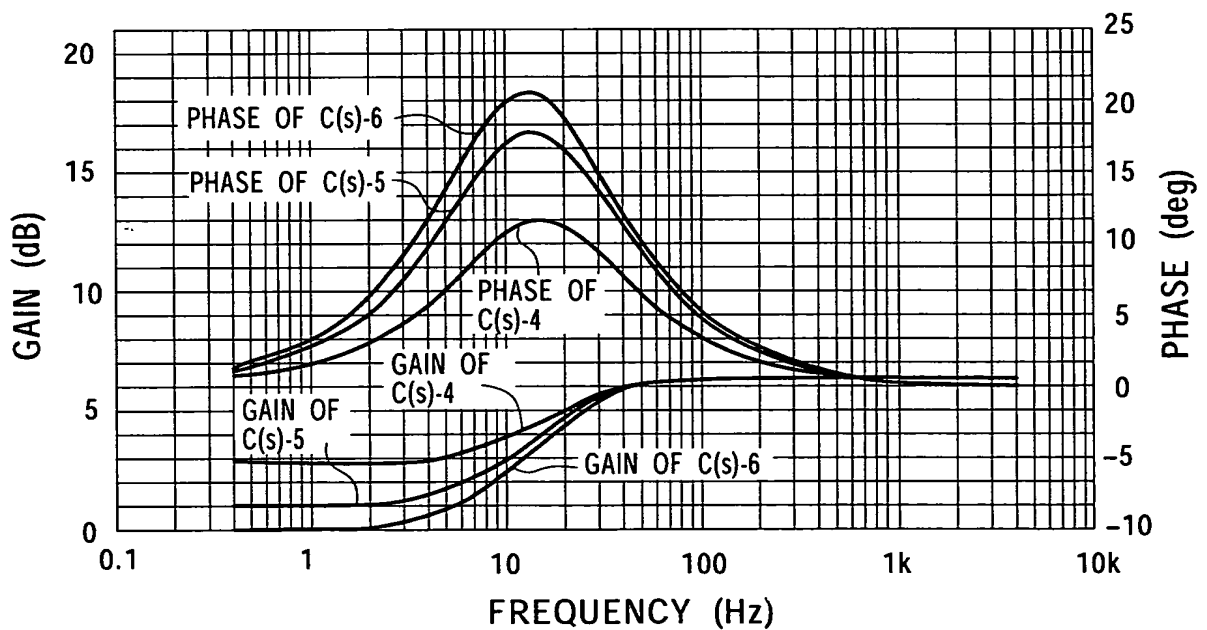


FIG. 23



19 / 31

FIG. 24

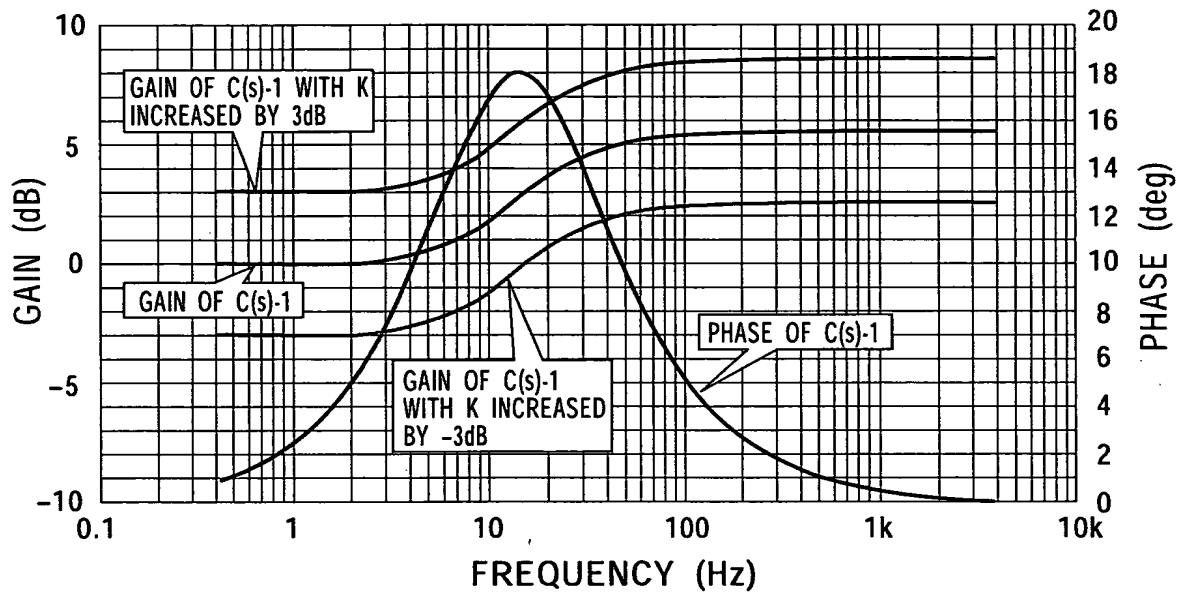
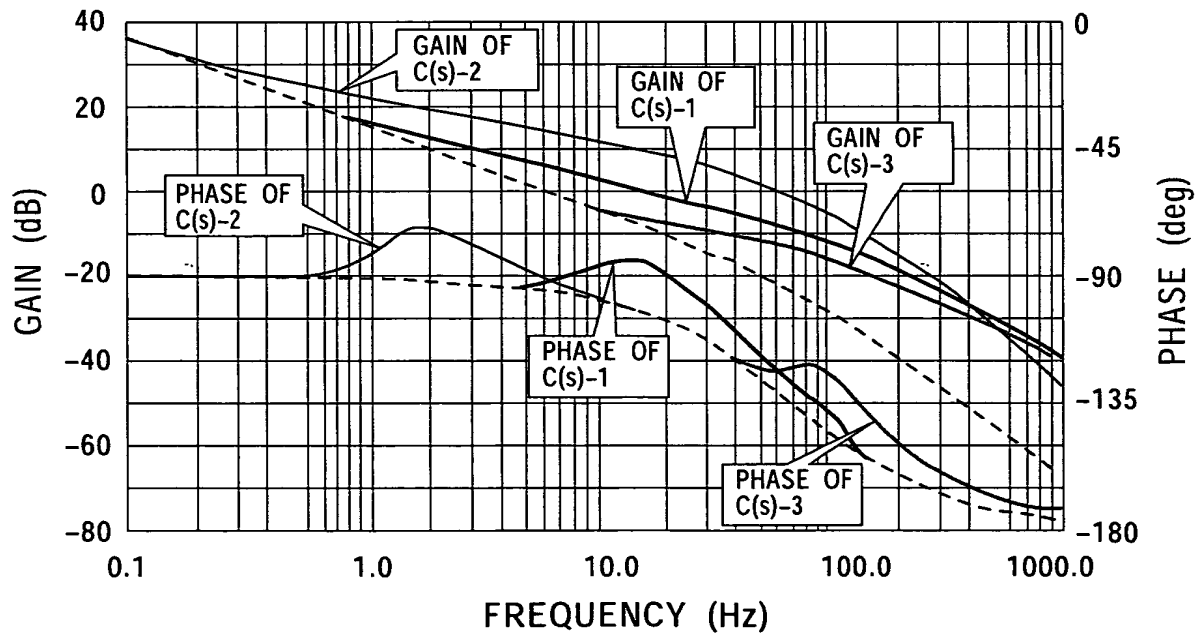
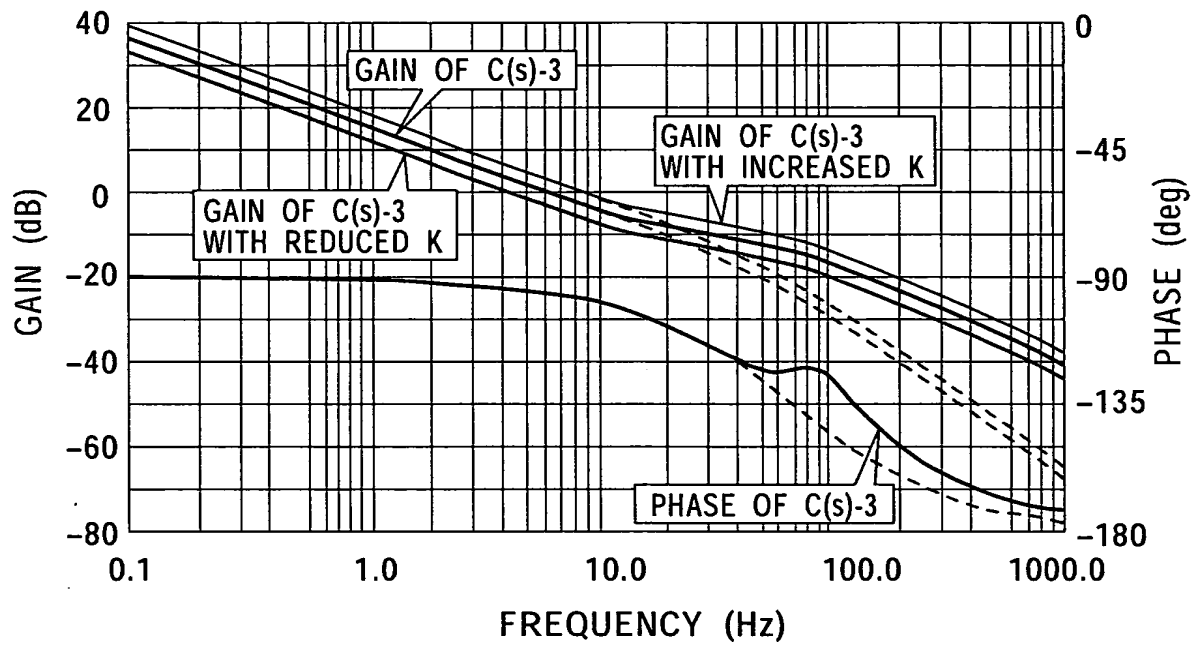


FIG. 25



20 / 31

FIG. 26



21 / 31

FIG. 27

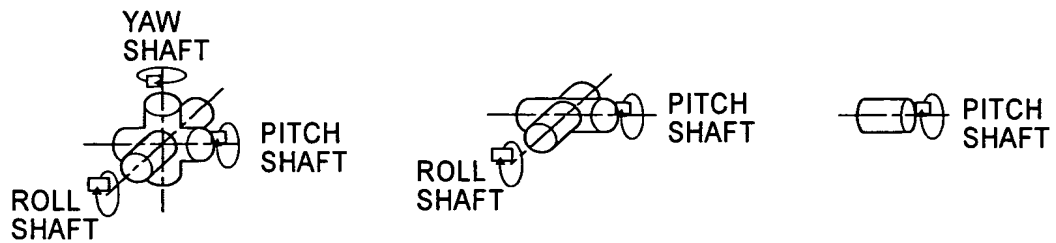
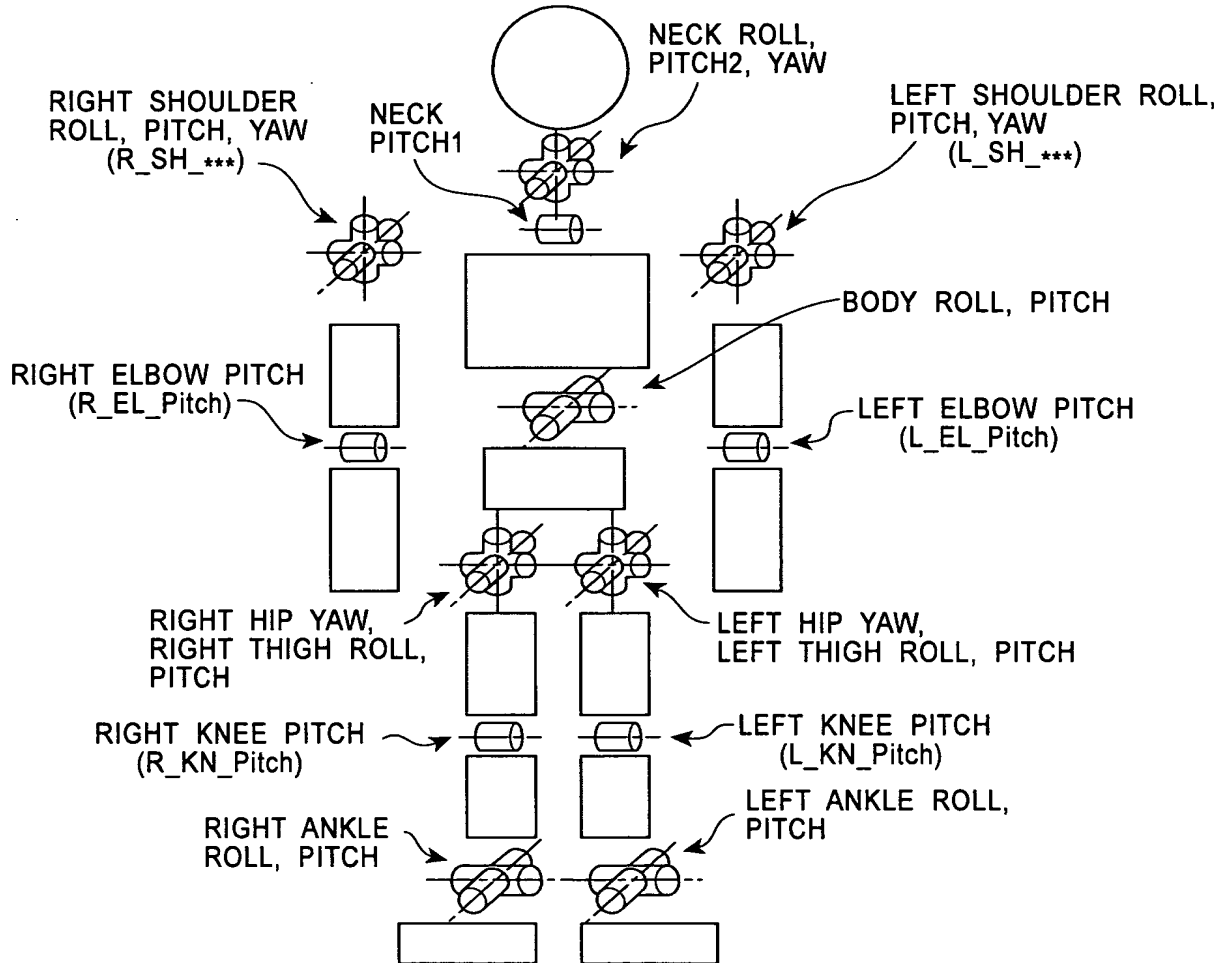
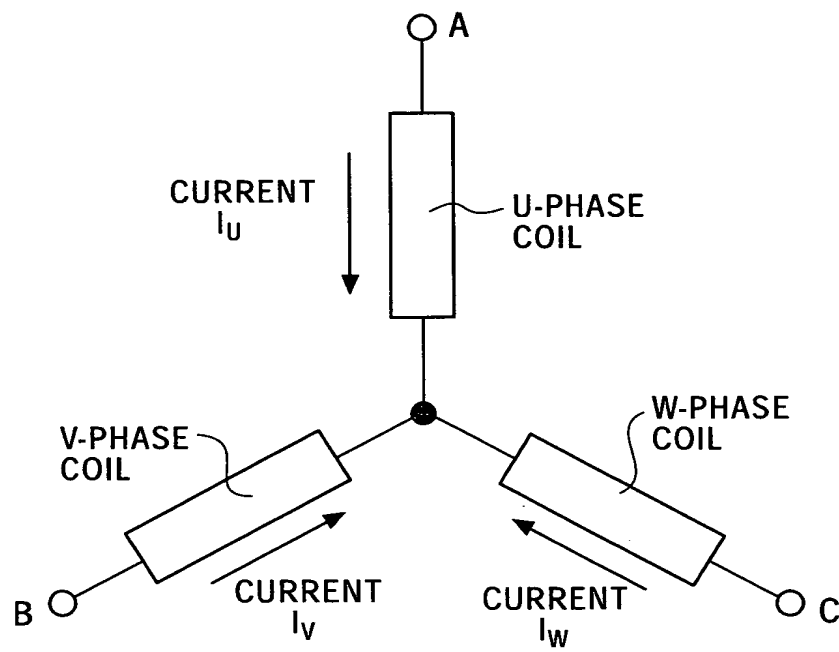
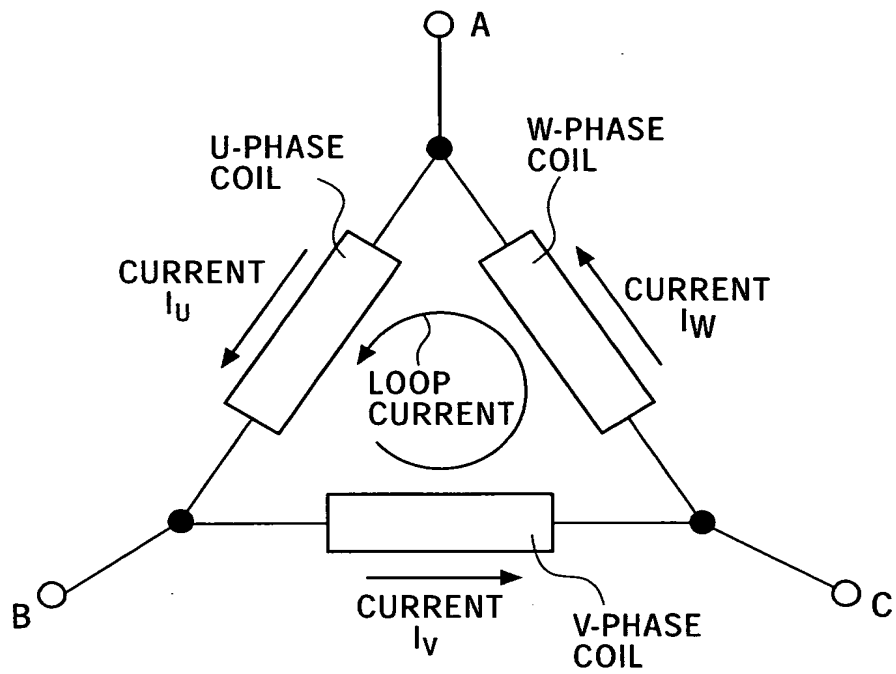


FIG. 28



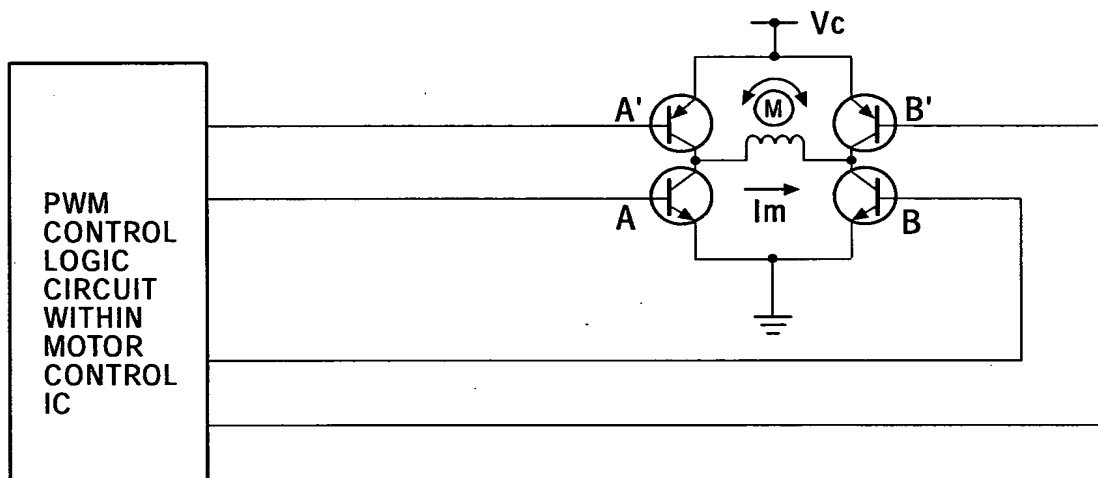
23 / 31

FIG. 29



24 / 31

FIG. 30



I_m : CURRENT FLOWING MOTOR COIL (A)
 R_m : DC RESISTANCE OF MOTOR COIL (Ω)
 L_m : INDUCTANCE OF MOTOR COIL (H)
 V_c : POWER SUPPLY VOLTAGE FOR DRIVING MOTOR (V)
 K_t : TORQUE COEFFICIENT OF MOTOR (N-m/A)
 K_a : COUNTER-ELECTROMOTIVE VOLTAGE
COEFFICIENT OF MOTOR (V/rad/s)

25 / 31

FIG. 31

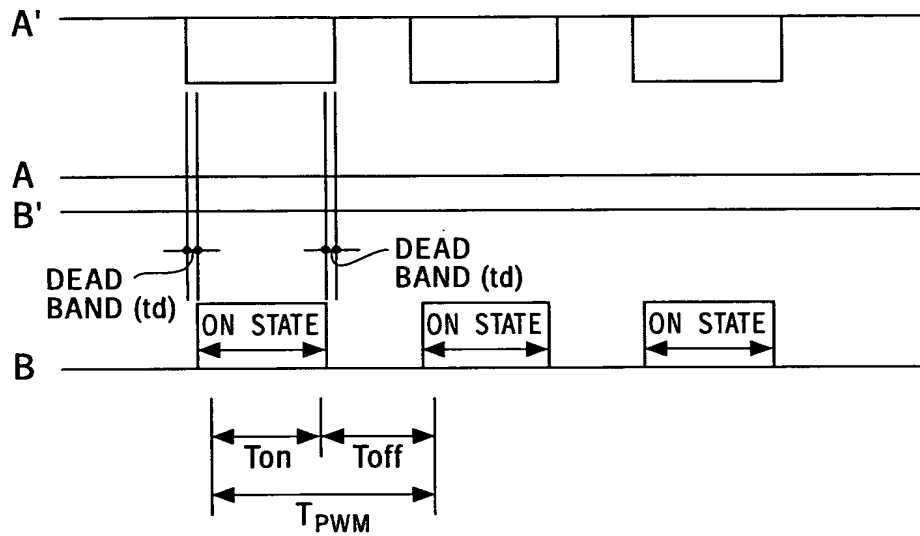


FIG. 32

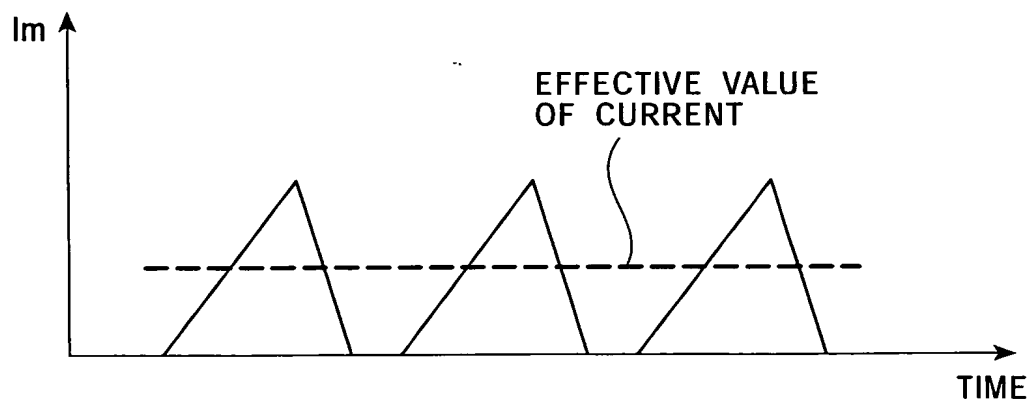
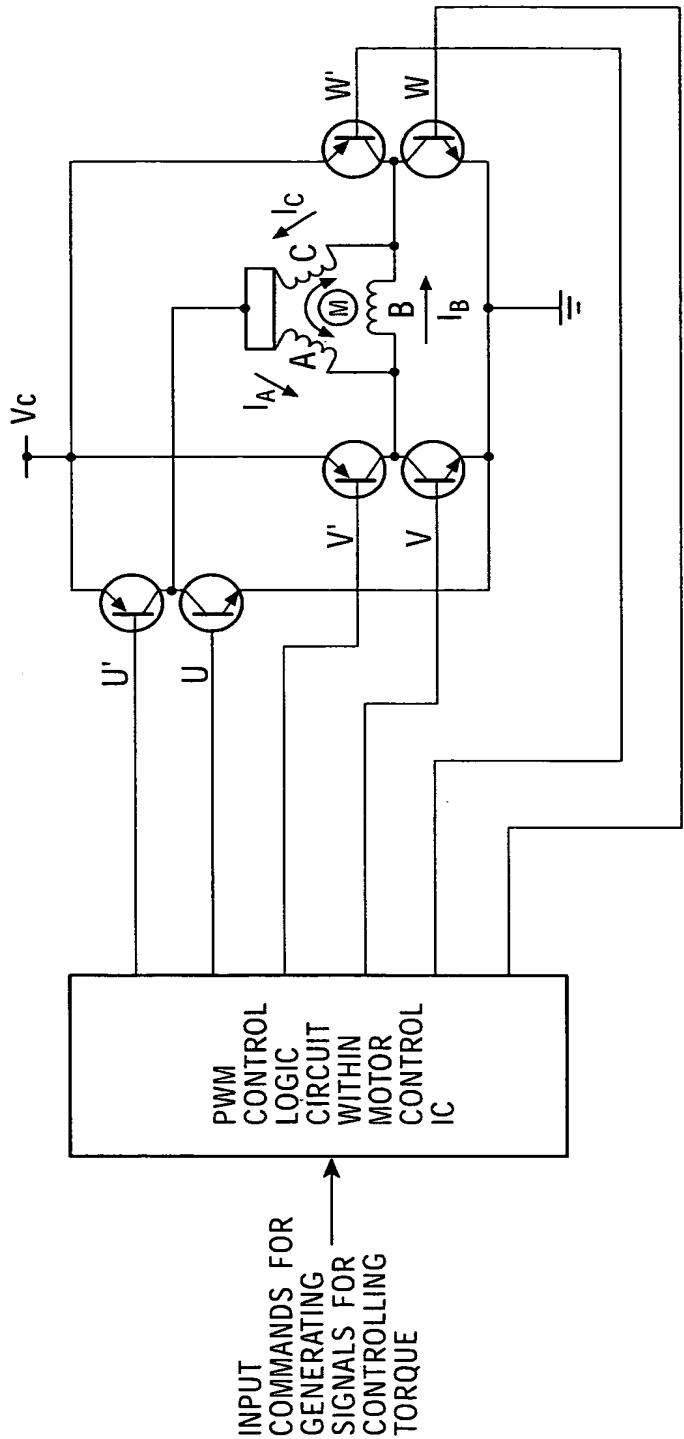
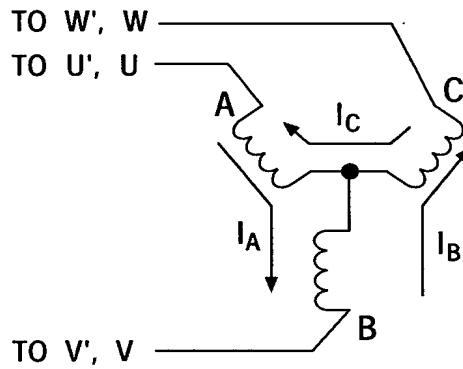


FIG. 33



27 / 31

FIG. 34



- $I_A - I_C$: CURRENTS FLOWING A-PHASE MOTOR COIL
THROUGH C-PHASE MOTOR COIL (A)
- $R_A - R_C$: DC RESISTANCES OF A-PHASE MOTOR COIL
THROUGH C-PHASE MOTOR COIL (Ω)
- $L_A - L_C$: INDUCTANCES OF A-PHASE MOTOR COIL
THROUGH C-PHASE MOTOR COIL (H)
- V_c : POWER SUPPLY VOLTAGE FOR DRIVING MOTOR (V)
- K_t : TORQUE COEFFICIENT OF MOTOR (N-m/A)
- K_a : COUNTER-ELECTROMOTIVE VOLTAGE
COEFFICIENT OF MOTOR (V/rad/s)

FIG. 35

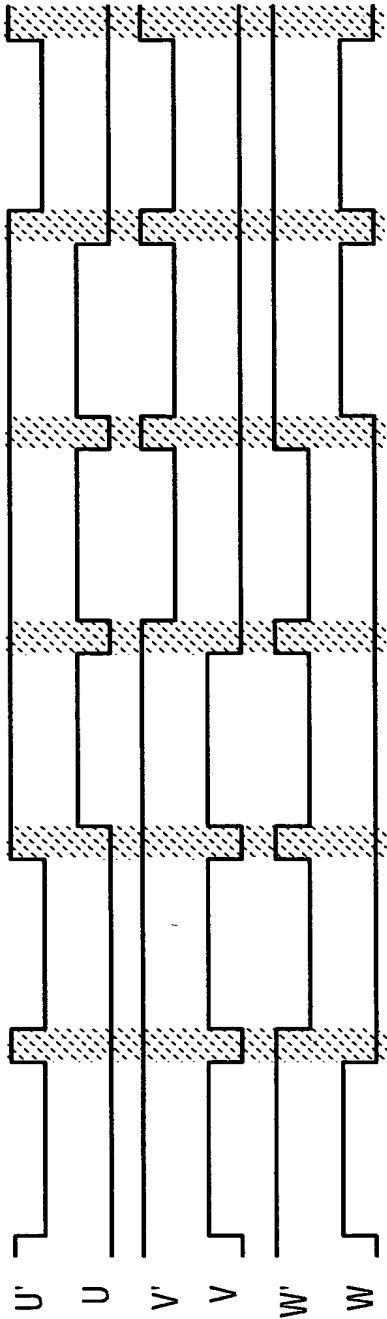
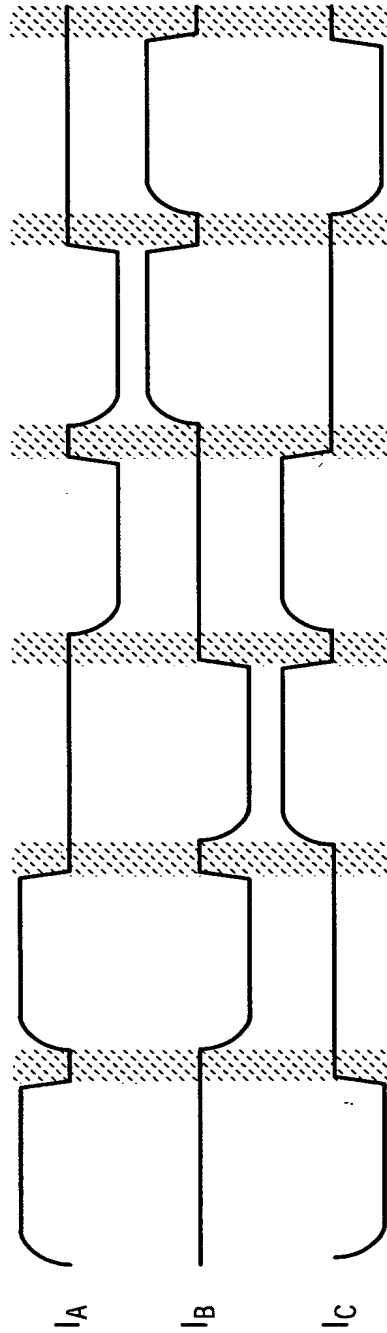


FIG. 36



30 / 31

FIG. 37

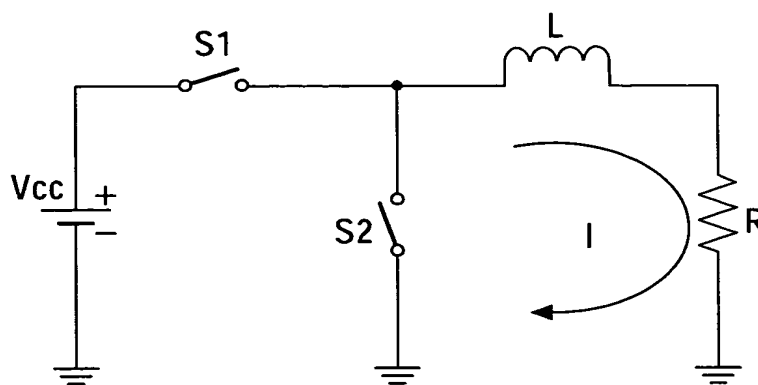


FIG. 38

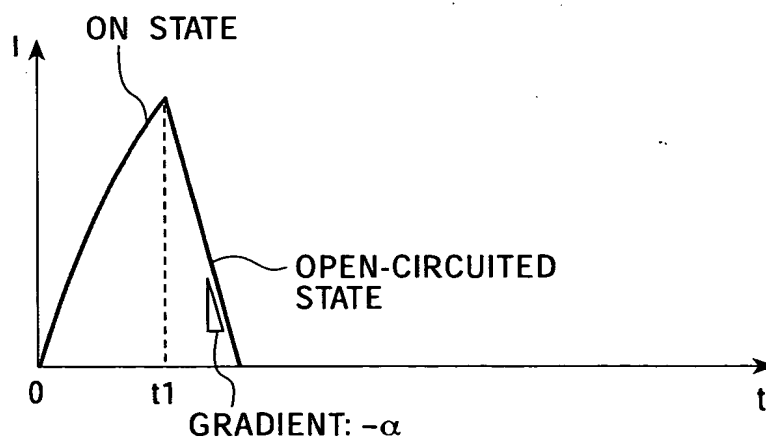


FIG. 39

